



Lock & Dam 12

(Bellevue, Iowa)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Construction: 1934-1938

General Contractors:

Lock: James Stewart Corporation, Chicago, Ill.

Dam: Warner Construction Company, Chicago, Ill.

Congressional District: IA-1; IL-16

Description

Lock and Dam 12 is 556.7 miles above the confluence of the Mississippi and Ohio rivers. The complex stretches across the river at a point where the bluffs on the Iowa side are very close to the river; a complex of islands and sloughs extends nearly three-quarters of the way across the river from the Illinois side. Bellevue State Park occupies the high ground on the Iowa side, while the urbanized area of Bellevue extends to the government-owned property on the flat land below the bluff. The Lost Mound Unit of Upper Mississippi River National Wildlife and Fish Refuge occupies the islands, slough, and small flat bottom areas on the Illinois side.



Lock dimensions are 110 feet wide by 600 feet long with additional provisions for an auxiliary lock. The maximum lift is 9 feet with an average lift of 6 feet. It takes approximately 10 minutes to fill or empty the lock chamber.

The movable dam consists of seven submersible Tainter gates (20 feet high by 64 feet long) and three submersible roller gates (20 feet high by 100 feet long). The dam system also includes two, non-overflow, earth and sand-filled dikes; two transitional dikes; and a concrete-covered, ogee spillway, submersible earth and sand-filled dike. The foundation is set in sand, gravel, and silt. It takes eight hours for water to travel from Lock and Dam 11, in Dubuque, Iowa, to Lock and Dam 12.

History/Significance

Construction of Lock 12 began in February 1934 and was completed in November 1935. Construction of Dam 12 began in September 1936 and was completed in July 1938. The structure was placed in operation on May 14, 1939. During the peak of construction, a maximum of 1,217 men were employed at one time.

There were two time extensions given to the contractor during construction of the lock. Work was shut down and pumping of the cofferdam stopped on March 26, 1935, as the U.S. Government Weather Bureau forecasts indicated that the river stage would flood the cofferdam. The maximum river stage reached and exceeded the elevation required by the specifications for the top of the cofferdam by one-half foot. Construction was resumed on May 4, 1935. A 39-calendar-day time extension was granted for time lost from March 26 through May 4, 1935.

The second time extension was from June 29 through July 23, 1935. The river stage from Oct. 2, 1934, to Aug. 6, 1935, prevented the placing of concrete in the downstream guide wall without cofferdam protection. The contractor delayed the construction of a temporary cofferdam in anticipation that, prior to the completion of other work, the river would recede to a stage where building of a cofferdam would not be necessary. The river did not fall to this

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stage by July 11, 1935, so a temporary cofferdam was constructed and work on the guidewall resumed on July 24, 1935. The contractor was granted an extension of 25 days. While the winter of 1934-1935 was severe at times, the contractor took advantage of the recurrent mild weather to place concrete.

The lock and dam elements of the complex were completed at a cost of \$5,581,000.

Annual Tonnage (20-Year Historical)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1992	24,301,140	1997	20,225,980	2002	23,031,159	2007	17,681,771
1993	14,340,090	1998	21,596,296	2003	19,622,041	2008	13,299,444
1994	17,119,928	1999	24,426,919	2004	17,350,487	2009	15,164,599
1995	21,208,560	2000	22,280,448	2005	17,672,950	2010	15,300,161
1996	22,157,885	2001	19,098,873	2006	18,655,930	2011	14,326,574

Commodity Tonnage & Lockages (2011)

Coal	1,876,884	<u>Subtotals:</u>	Grain	6,278,572
Petroleum	250,800		Steel	57,774
Chemicals	2,274,551			
Crude Materials	2,224,785	<u>Lockages:</u>	Commercial Boats:	1,368
Manufactured Goods	973,990		Recreation Boats:	2,319
Farm Products	6,699,814		Light Boats:	94
Manufactured Machinery	7,350		Other Boats:	41
Waste Material	0		Total Boats:	3,822
Containers & Pallets	1,600		Total Cuts:	3,334
Unknown	16,800			

The 9-Foot Channel Project

Lock and Dam 12 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

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